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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/987,689	11/15/2001	Roni Zvuloni	01/21569	7305

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EXAMINER	
TYLER, CHERYL JACKSON	
ART UNIT	**PAPER NUMBER**
3746	

DATE MAILED: 01/13/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/987,689	ZVULONI, RONI	
	Examiner	Art Unit	
	Cheryl J. Tyler	3746	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *26 September 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-44* is/are pending in the application.

4a) Of the above claim(s) *34-44* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-33* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *15 November 2001* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

13)☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

a) ☐ The translation of the foreign language provisional application has been received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Drawings

1. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: "bi-pumps 18a and 18b" (paragraph 140, line 5). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Objections

2. Claims 4 and 6 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Claim 2 recites the limitation that the first variable-volume portion is coupled during a second phase of operation to a mechanism for transportation a compressed gas from the first variable-volume portion to a compressed gas utilizing application, which is the same limitation found in claim 4. Similarly, claim 5 recites that the second variable volume portion is designed and constructed to be couplable during the second phase of operation to a source of hydraulic and/or pneumatic fluid under pressure. This same limitation is found in claim 6 from which claim 5 depends.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-8 and 16-17 are rejected under 35 U.S.C. 102(b) as being anticipated by Gagnan (2,700,876). Gagnan teaches an apparatus for compressing gas that includes a cylindrical body 1 (corresponding to the claimed fixed-volume container) having a hollow (unnumbered, but clearly illustrated in Figure 1) and a moveable element 2 that subdivides the hollow into a first variable-volume portion and a second variable-volume portion; the second variable volume portion having an opening (unnumbered, but clearly illustrated in Figure 1) for introducing liquefied gas under pressure. During a first phase of operation, Gagnan teaches that the first variable-volume portion is designed and constructed so as to be couplable to a vaporizer 23 (corresponding to the claimed mechanism for introducing a gas into the first variable-volume portion. Gagnan further teaches that the first variable-volume portion is designed and constructed so as to be couplable to cylinders 31 (corresponding to the claimed mechanism for transporting a compressed gas from the first variable-volume portion to a compressed gas utilizing application, while the second variable-volume portion is designed and constructed to be couplable during the second phase of operation to a source of liquefied gas under pressure (see column 1, lines 35-76).

Gagnan teaches that the moveable element is a solid cylindrical piston (see column 2, line 64).

While the apparatus claims have multiple references to process and/or intended use of the device, they are nonetheless taught by Gagnan. The applicant is reminded, however, that a recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus satisfying the structural limitations of the claims, as is the case here.

5. Claims 1, 9, 11, 13 and 15 are rejected under 35 U.S.C. 102(b) as being anticipated by Elliott et al. (3,963,377). Elliott et al. teach a fixed volume housing 229 having a hollow and a bladder 225 (corresponding to the claimed moveable element) subdividing the hollow into a first variable-volume chamber 224a and a second variable-volume chamber 224b, the second variable-volume chamber having an opening 228 for introducing a hydraulic oil under pressure. The bladder is "constructed of natural or synthetic rubber or other leak-proof, non-corrosive materials ... the housing may be coated with a protective material such as plastic or other suitable means..." (column 8, lines 9-17). Elliott et al. further teach that the first variable-volume chamber 224a forms a portion of the hollow and is defined be the fixed volume housing and outside of the bladder.

6. Claims 1-9, 13-14, 18-19, 21, and 30-33 are rejected under 35 U.S.C. 102(b) as being anticipated by Stanford (4,673,415). Stanford teaches a first pressurizing means C (corresponding to the claimed first gas compression apparatus) including a fixed-volume reservoir 50 having a hollow and a movable barrier 52 that divides the reservoir

into a first oxygen receiving region 54 (corresponding to the claimed first variable-volume portion) and a first pressurizing fluid receiving region 56 (corresponding to the claimed second variable-volume portion) having an opening (unnumbered, but inherently illustrated in Figure 1); welding equipment (see column 1, lines 8-10 and corresponding to the claimed compressed gas utilizing application utilizing compressed gas); a main compressed air supply valve 16 (corresponding to the claimed first mechanism for transporting a compressed gas from the first oxygen receiving region to the downstream system components (see column 3, lines 41-43); a second pressurizing means D (corresponding to the claimed second gas compression apparatus) including a second fixed-volume reservoir 90 having a hollow and a movable barrier 92 that divides the reservoir into a second oxygen receiving region 94 (corresponding to the claimed second variable-volume portion) and a second pressurizing fluid receiving region 96 (corresponding to the claimed second variable-volume portion); and valve 62 for transporting a compressed gas from the first variable-volume portion of the second gas compression apparatus to the welding equipment (i.e., through the first pressurizing means C). Stanford further teaches control means 78 for controlling the transporting of the compressed gas.

While the apparatus claims have multiple references to process and/or intended use of the device, they are nonetheless taught by Stanford. The applicant is reminded, however, that a recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus satisfying the structural limitations of the claims, as is the case here.

7. Claims 18, 21-22, and 24 are rejected under 35 U.S.C. 102(b) as being anticipated by Tomoiu (5,807,083). Tomoiu teaches a first gas compression apparatus including a fixed-volume container (unnumbered, but clearly illustrated in Figure 1) having a hollow and a free piston 32 (corresponding to the claimed moveable element) dividing the hollow into a main gas cylinder 36 (corresponding to the claimed first variable-volume portion) and a main hydraulic cylinder 30 (corresponding to the claimed second variable-volume portion), the main hydraulic cylinder having an opening 56 for introducing hydraulic fluid under pressure; a high pressure output 48 (corresponding to the claimed compressed gas utilizing application utilizing compressed gas); and sensors 50, 52, 54 (corresponding to the claimed feedback sensor as a pressure sensor - see column 2, line 42-55).

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

9. Claims 9-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gagnan (mentioned previously) in view of Schuman et al. (5,993,172) and Eggleston (862,867). Gagnan teaches most of the limitations of the claims. However, he does not explicitly teach interchangeably using a piston, bladder, or diaphragm. Schuman et al. teach an apparatus for pressure processing a pumpable substance that includes a bladder 15 in one embodiment and a piston 46 in another embodiment. Eggleston

further teaches using a diaphragm in a pneumatic pumping apparatus. Eggleston teaches that "it will be noted that diaphragms which are substituted for the piston, plunger and cylinders, will cause the same movement to be imparted to the piston stem F, whereby the same result may be accomplished" (page 1, column 2, lines 99-104). Therefore, since these three elements were art-recognized equivalents at the time of the invention in those pumping applications where it is immaterial what causes the gas to be pressurized, one of ordinary skill in the art would have found it obvious to substitute a bladder or diaphragm for the piston of Gagnan.

10. Claims 1-4, 18, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gagnan (mentioned previously) in view of Stanford (mentioned previously). Gagnan teaches all of the limitations of the claims including a gas chamber 10 (corresponding to the claimed gas manifold). However, Gagnan does not explicitly teach a compressed gas utilizing application utilizing compressed gas. Stanford teaches that it is old and well known to use pressurized cylinders of oxygen in automotive garages and other industrial applications for welding and other industrial equipment (see column 1, lines 16-23). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use compressed oxygen cylinders, taught by Gagnan, in welding equipment, as taught by Stanford, in order to advantageously provide a portable supply of oxygen to make welding equipment more portable.

While the gas utilizing application utilizing compressed gas was recited as an intended use of the apparatus in claims 2-4, the rejection is repeated here as being

obvious to one of ordinary skill in the art to use the pressurized cylinders in an application.

11. Claims 23 and 25-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tomoiu (mentioned previously). While Tomoiu teaches that any known sensors may be used in the compressor 15, they do not explicitly teach using temperature and/or mass flow sensors. Tomoiu does teach that a "quick release of the slightly compressed hydraulic fluid or oil causes a temperature drop" (column 3 ,lines 57-58). It would have been obvious to one of ordinary skill in the art to use a temperature sensor to monitor the temperature of the hydraulic fluid to see that it advantageously cools the air of gas compressor in an adequate manner. Similarly, it would have been obvious to one of ordinary skill in the art to use a mass flow sensor to determine the amount of compressed gas flowing from the cylinder, as the mass flow rate decreases as the tank fills, and thus, the user can advantageously determine how close the tank is to its filling capacity.

With regards to claims 26-29, one of ordinary skill in the art would have known to ensure that the controller included a processor and memory to advantageously provide for automated operation of the compressor, and a remotely controlled device would enable operation of the compressor from a distance if the user were not directly in the vicinity of the device.

Conclusion

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- Hall, Jr. et al. (3,864,060) and Grove et al. (3,524,714) teach devices for pumping a liquid using a pressurized gas supply.
- Tolle (636.013); and Shipman, III (4,750,869) teach air compressors as known in the art.

Contact Information

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Cheryl J. Tyler whose telephone number is 703-306-2772. The examiner can normally be reached on Monday-Thursday, 6:00 - 10:30 am.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Justine R. Yu can be reached on 703-308-2675. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9302.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0861.

Cheryl J. Tyler
Primary Examiner
Art Unit 3746

CJT
January 12, 2004